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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,055	08/21/2006	Koji Kikushima	6700-89059	5610

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EXAMINER	
NGO, TANYA T	

ART UNIT	PAPER NUMBER
4177	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/590,055	KIKUSHIMA ET AL.	
	Examiner	Art Unit	
	TANYA NGO	4177	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/11/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1-3 and 8-10 are rejected under 35 U.S.C. 102(b) as being disclosed by Hardy et al (herein Hardy) US Patent 6,005,701.

Re claim 1 and 8, Hardy discloses an optical emission head with laser and modulator which relates to fiber optics transmission of signals (abstract). In the background of the invention Hardy discloses that the combination is generally preferred to the use of direct-modulation laser because the variation in current generating the amplitude modulation influence the wavelength emitted by the laser, and this variation, even when slight, degrades transmission performance (Col. 1, lines 11-16). The examiner is interpreting the direction-modulation laser to be the first signal which is a modulation optical signal. Hardy discloses an invention that includes of an optical signal originated from the optical coupler (7, Fig. 3), which is an optical splitting means because it recovers a small portion of the optical signal so as to transmit it to an optical receiver (9, Fig. 3) hence splitting the signal (Col. 3, lines 3-6). The optical receiver (9, Fig. 3) is a photoelectric conversion means (Col. 3, lines 18-20) and is connected to the output of the coupler (Col. 3, lines 20-22). After the photoelectric conversion, the signal goes through an amplifier (10, Fig. 3) and a subtractor (11, Fig. 3)

which remove the noise from the modulated signal to create a new modulated signal that limited the degradation of the original modulated signal by yielding modulated signal M' in the form of M (1-e) (Col. 3, lines 56-60) in which e is the noise power superimposed on the signal (Col. 2, lines 21-22) and M is the basis of the modulating electrical signal. The means for creating the new modulating signal is equivalent to the cancellation means because it removes the noise of the second signal M, limiting the degradation of the modulated signal which the examiner is interpreting to be equivalent to canceling interference contained in the other split optical signal.

Re Claim 2 and 9, Hardy discloses all the elements of Claim 1 and 8, which Claim 2 and 9 are dependent upon. Furthermore, Hardy discloses the cancellation means consists of an optical receiver (9, Fig. 3) and amplifier (10, Fig. 3) that tape of the signal at the output of the optical receiver by sending it to a low-pass filter (13, Fig. 3) with a cutoff frequency which eliminates the spectrum of noise (Col. 4, lines 39-42). Hardy further discloses the necessity of a phase adjustment between the noise signal e and the signal to be modulated in this current embodiment by adapting the optical fibers; however a phase shifter could also be used (Col 5, lines 1-5). Lastly, Hardy discloses an optical modulator (8, Fig. 3) that intakes the other split of the optical signal Pi, which is the electrical signal available to optical receiver (9, Fig. 3) and, as well as M' (Col. 3, lines 66-67), which is the, which is the signal M modulated with the phase adjust electrical signal (Col 3, lines 35-60).

Re Claim 3 and 10, Hardy discloses all the elements of Claim 1 and 8, which Claim 3 and 11 are dependent upon. Furthermore, Hardy discloses the cancellation means consists of

an optical receiver (9, Fig. 3) and amplifier (10, Fig. 3) that tape of the signal at the output of the optical receiver by sending it to a low-pass filter (13, Fig. 3) with a cutoff frequency which eliminates the spectrum of noise (Col. 4, lines 39-42). Hardy further discloses the necessity of a phase adjustment between the noise signal e and the signal to be modulated in this current embodiment by adapting the optical fibers; however a phase shifter could also be used (Col 5, lines 1-5). A combining means for combining the phase-adjust electrical signal and the second signal is enabled by the electrical modulator (12, Fig. 3) which combines the electrical phase adjusted signal C with the second signal M, which combines the two signals through modulations and creates M' signal which is received by the optical modulator (8, Fig. 3) (Col 3, lines 51-60). Lastly, Hardy discloses an optical modulator (8, Fig. 3) that intakes the other split of the optical signal Pi, which is the electrical signal available to optical receiver (9, Fig. 3) and, as well as M' (Col. 3, lines 66-67), which is the, which is the signal M modulated with the phase adjust electrical signal (Col 3, lines 35-60).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 4 -5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardy as applied to claims 1 and 8 above, and further in view of ITU-T J.185, Transmission

equipment for transferring multi-channel television signals over optical access networks by FM conversion.

Re Claim 4 and 11, Hardy discloses all the elements of Claims 1 and 8, which Claim 4 and 11 are dependent upon. Hardy does not disclose that the first signal is a FM batch converted signal. However, the International Telecommunication Union (ITU) put out a recommendation for sending multi-channel television signals over optical access networks by FM conversion in which the main carrier is the optical frequency signal carrier and the sub-carriers transfer the electrically multiplexed FDM video signals in the optical sideband, which would allows the system to offer broadcast services and also data and voice communication services over the same optical network (Section 2). The signal sent over the optical access network is equivalent to a FM batch convert signal because it is a multi-channel FDM television signals that is convert into one single wideband FM signal (Section 2, First paragraph). Therefore, it would have been obvious for one of ordinary skill at the time of the invention to have one of the signals be a FM batch converted signal because it would achieve the aforementioned advantage of allowing the system to offer broadcast services and also data and voice communication service over the same optical access network (Section 2, paragraph 3).

Re Claim 5, Hardy and the ITU disclose all the elements of Claim 4, which Claim 5 is dependent upon. Hardy discloses that the second signal M is a RF radio-frequency television signal (Col. 3, lines 53-55). While Hardy does not disclose that the signal is broadcasted via

satellite, the signal is capable of being satellite broadcasted because the system disclosed by Hardy was built to receive RF signals regardless of the origin of broadcast.

5. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardy and ITU as applied to claims 4 and 11 above, and further in view of Noreen et al US Patent 5,303,393.

Note: the following rejection on Claim 5 is made as a backup in the situation where the former rejection of Claim 5 is not upheld (i.e. the modified device of Hardy is not capable of being satellite broadcasted).

Re Claims 5 and 12, Hardy and the ITU disclose all the elements of Claim 4 and 11, which Claims 5 and 12 are dependent upon. Hardy further discloses that the second signal M is a RF radio-frequency television signal (Col. 3, lines 53-55). Hard does not disclose that the signal is a satellite broadcasted signal. However, Noreen discloses the use of a mobile satellite terminal which allows greatly expanded access by mobile radio user to diverse audio programming sources and communication and navigation service (Col. 1, lines 13-16). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to have the RF signal to be satellite broadcasted because it would greatly expand access by mobile radio user (Col. 1, lines 13-14), especially to remote areas, which are inadequately served by terrestrial broadcasters (Col. 1, lines 32-33).

6. Claims 6 -7 and 13 - 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardy, ITU, and Noreen as applied to claim 5 and 12 above, and further in view of Kikushima et at (herein Kikushima) with US PG PUB 20070212073 as a translation of publication WO 2006009197 A1..

Re Claims 6 and 13, Hardy, ITU and Noreen disclose all the elements of the optical transmitter device or method in Claims 5 and 12, which Claims 6 and 13 are dependent upon. Hardy, ITU, and Noreen do not disclose an optical receiving device to receive that comprises of an optical splitter enabled by the (WDM, Fig. 1) that splits the received optical signal to an optical signal containing the FM batch (wavelength 1) and the an optical signal containing the satellite broadcasting RF signal (wavelength 2). A first photoelectric conversion means which is enabled by the optical receiver of the first wavelength which converts the optical signal containing the FM batch conversion signal (wavelength 1) split by the optical splitting means (WDM) to an electric signal. A demodulation means enabled by the FM demodulation the electrical signal converted optical receiver of the first wavelength. A second photoelectric conversion means for converting the optical signal containing satellite broadcasting RF signals (wavelength 2) enabled by the optical receiver with wavelength 2 as the input (paragraph [0011]). Kikushima does states that the inclusion of a down-converter circuit to covert the signal to an IF signal will make the system compatible with commercially available BS/CS tuner systems (paragraph [0033]). Therefore, it would have been obvious to one of ordinary skill at the time of the invention to include the receiving system of Kikushima with the modified transmitting system of Hardy because it is

convention configuration for optical signal transmission (paragraph [0035]) as well as it enables a efficient transmission scheme through an optical fiber for multi-channel video signals (paragraph [0002]).

Re Claims 7 and 14, Hardy, ITU, and Noreen disclose all the elements of the optical transmitter apparatus or method of Claims 5 and 12, which Claims 7 and 14 are dependent upon. Hardy, ITU, and Noreen do not disclose an optical receiving device with a photoelectric conversion means, a filter means, a demodulation means, and down converting means. However, Kikushima discloses an optical signal receiver device (70a, Fig. 2) which includes a photoelectric conversion means for converting the received optical signal to an electric signal enabled by the optical receiver (172, Fig. 2). The receiver also includes a filter means for separating the electrical signal converted by the photoelectric conversion means to the FM batch converted signal and the satellite broadcasting signal enabled by high pass filter (174b, Fig. 2) and a low pass filter (174a, Fig. 2). A FM batch converted signal separated in frequency by the low pass filter (at point G) is demodulated to by an FM demodulator (176, Fig. 2) (at point H) which is the demodulation means for FM demodulating the FM batch conversion signal separated by the filter means. Lastly, the high frequency signal separated in frequency by the high pass filter (at point F) is output to a BS/CS converter (90, Fig. 2) where the signal is down-converted, which is equivalent to the down converting means for down-converting the satellite broadcasting RF signal separated by filter means (paragraph [0058]). It would have been obvious to one of ordinary skill at the time of the invention to include the this receiver because it allows the transmitted optical

signal to an electrical signal by a single photo receiving element and to frequency separate the two signals, (paragraph [0030]) which will remove the problem of increased number of circuit components that increase overall cost (paragraph [0010]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TANYA NGO whose telephone number is (571) 270-7488. The examiner can normally be reached on Monday - Friday from 7:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sam Yao can be reached on (571) 272-1224. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ngo/
March 5, 2009

/Sam Chuan C. Yao/
Supervisory Patent Examiner, Art Unit 4111